

Construct Validity Evidence

Standalone verified Python analysis

Test: Construct Validity Evidence

Design: Integrated CFA evidence from convergence, discrimination, and criterion association.

Variables: G1, G2, G3, famrel, freetime, goout, criterion G3

Null hypothesis: The construct scores show no convergent, discriminant, or criterion-related evidence.

Formula: Evidence combines AVE, CR, HTMT, factor correlation, and external criterion r.

Source rows: 649

Calculated metrics:

minimum_ave: 0.26809760378634656

minimum_cr: 0.46472892919002623

htmt: 0.21043104090296003

factor_correlation: -0.14469453186032052

criterion_r: 0.9034976113559182

criterion_p_value: 2.9749991570957307e-240

Independent reference values:

minimum_ave: 0.26809760378634656

minimum_cr: 0.46472892919002623

htmt: 0.21043104090296003

factor_correlation: -0.14469453186032052

criterion_r: 0.9034976113559182

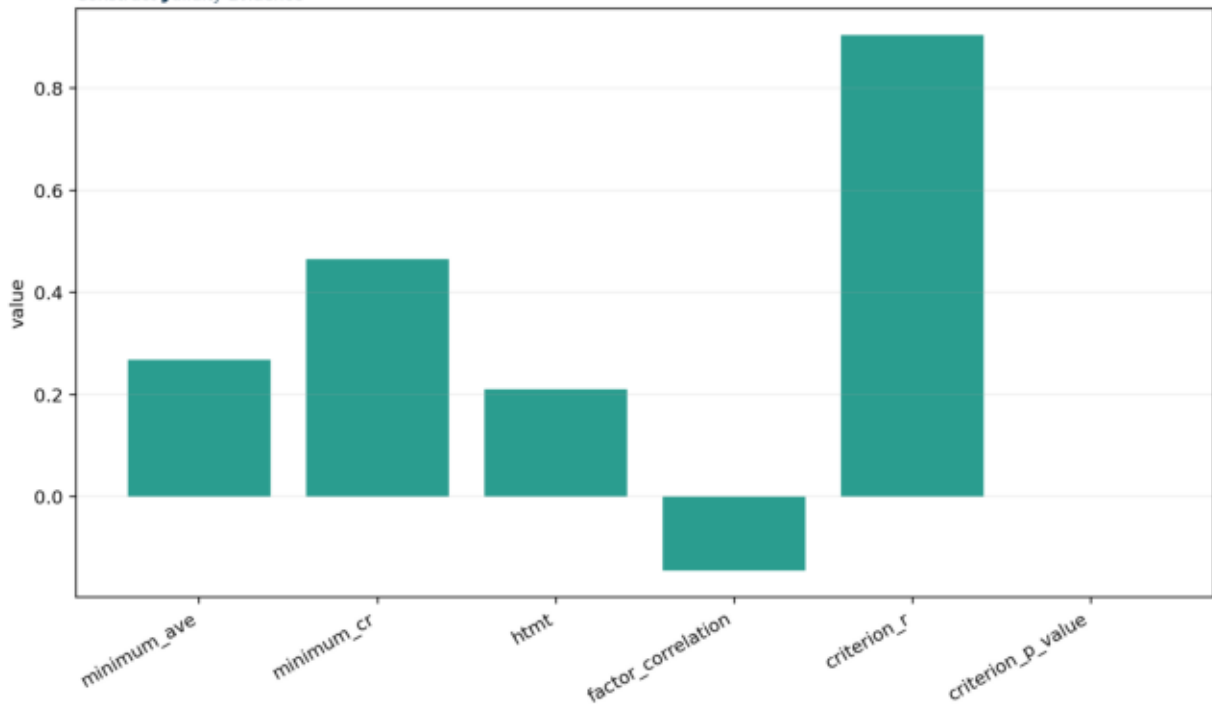
criterion_p_value: 2.9749991570957307e-240

Interpretation:

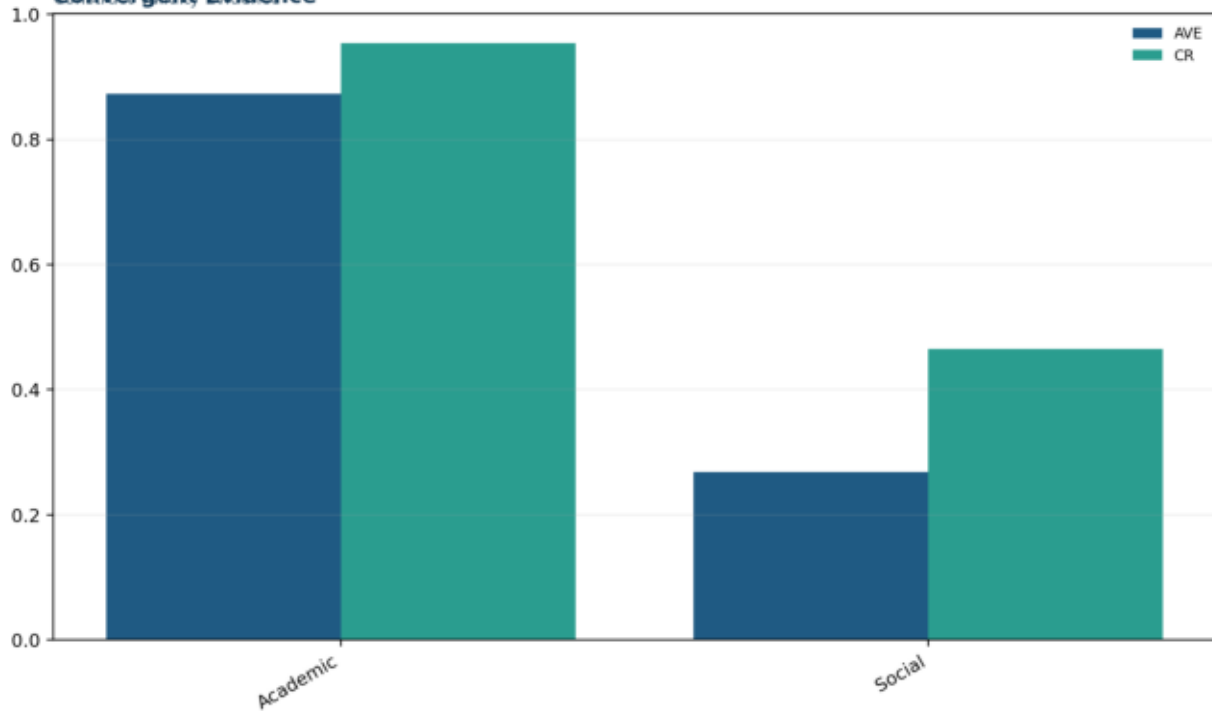
Construct validity is integrated from convergent, discriminant, and criterion evidence.

Criterion association $r=0.903498$.

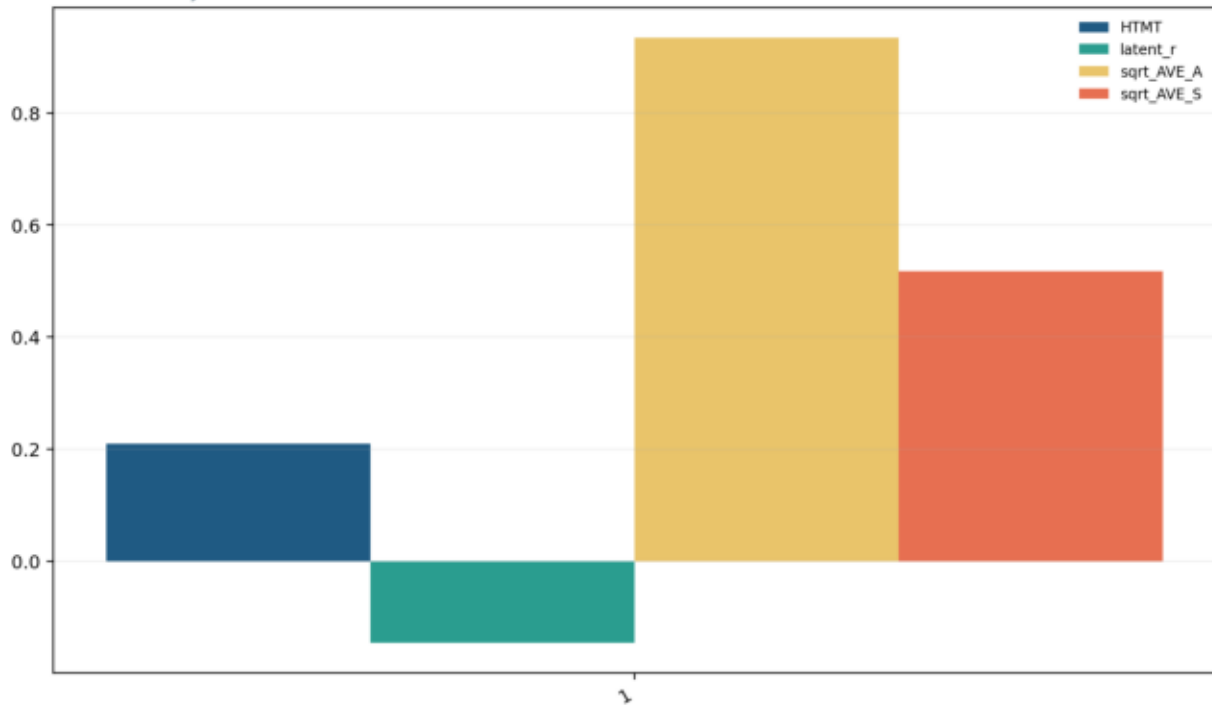
Primary Metrics



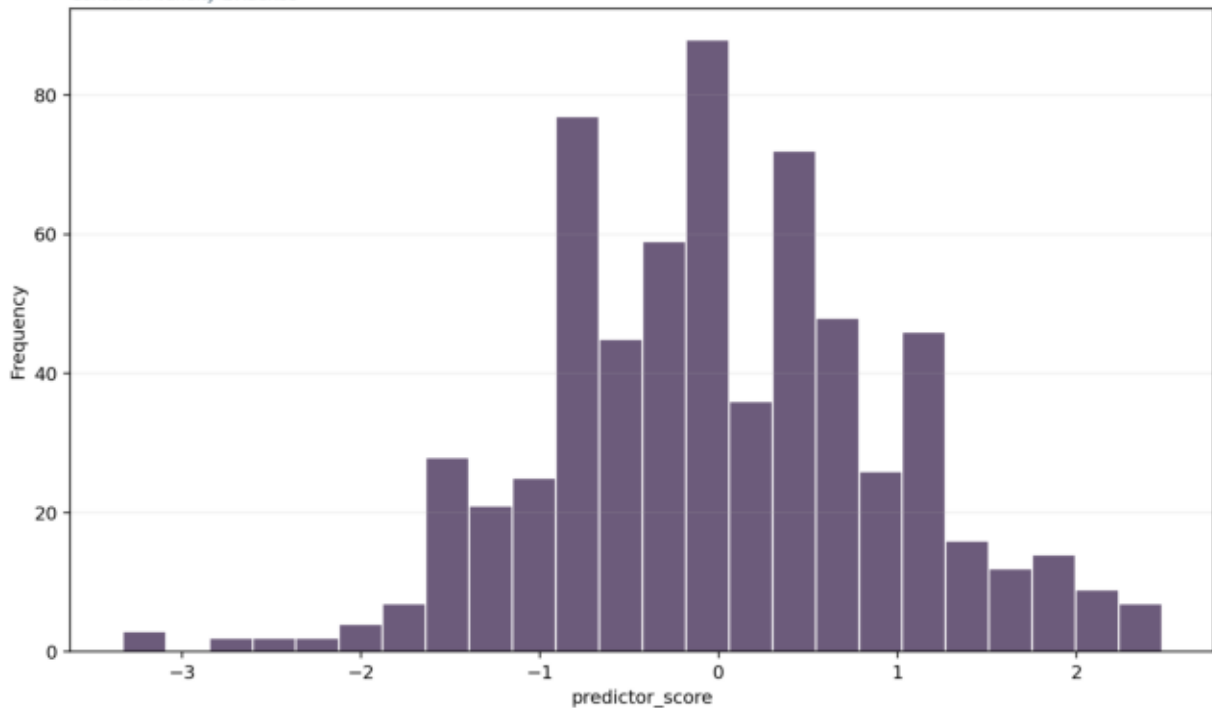
Convergent Evidence



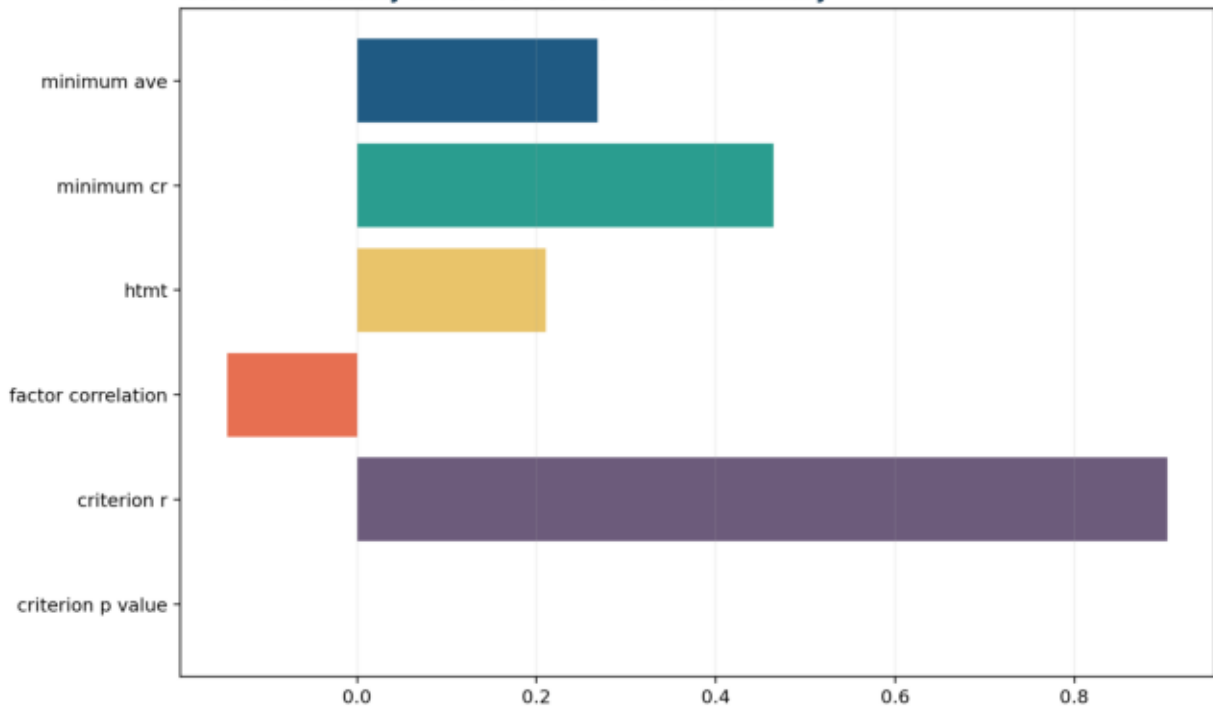
Discriminant Evidence



Criterion Evidence



Construct Validity Evidence verified result summary



Primary Metrics

metric	value
minimum_ave	0.268098
minimum_cr	0.464729
htmt	0.210431
factor_correlation	-0.144695
criterion_r	0.903498
criterion_p_value	2.975e-240

Convergent Evidence

construct	AVE	CR
Academic	0.872485	0.953465
Social	0.268098	0.464729

Discriminant Evidence

HTMT	latent_r	sqrt_AVE_A	sqrt_AVE_S
0.210431	-0.144695	0.934069	0.517781

Criterion Evidence

predictor_score	G3
-2.17397	11
-0.534782	11
0.354827	12
0.890697	14
0.172695	13
0.18322	13
0.365352	13
-0.00943699	13
1.41604	17
0.18322	13
0.890697	14
-0.181044	13
0.354827	12
0.18322	13
0.890697	15
1.95191	17
0.536958	14
0.708565	14
-1.23173	7
0.18322	12
0.354827	14
0.00108806	12
0.354827	14
-0.524257	10
-0.35265	10
-0.35265	12